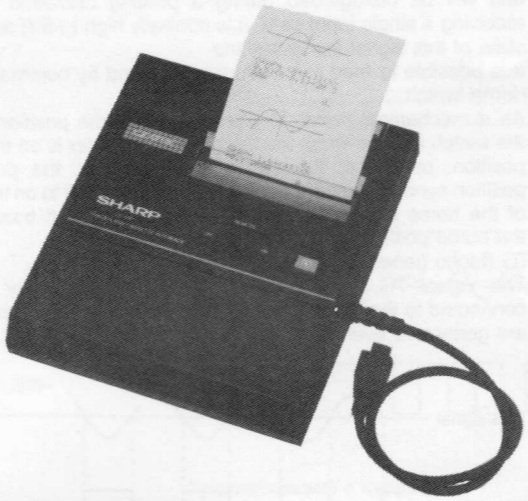
SHARP SERVICE MANUAL

CODE: 00ZCE50PSM//E



MODEL CE-50P

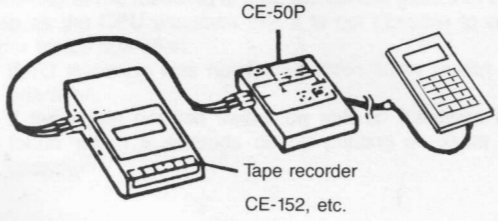
1. Product outline

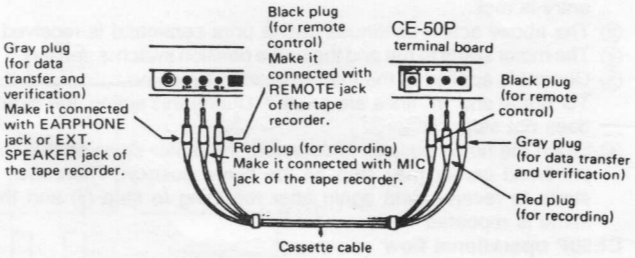
The CE50P is a cassette interface incorporated printer option used with the EL9000 and EL5200.

2. Specifications

Printer type:
MTP-201G thermal dot graphic printer
Printing positions:
21 printing positions per line, maximum, but differs according to the model interfaced.
Printing speed:
Approx. 0.9 line per second
Paper feed speed:
Approx. 0.9 line per second
Printing character dots:
7×6 dots for character
8×6 dots for graphics
Dot pitch:
0.35mm high, 0.35mm wide
Linefeed pitch:
2.8mm
Character set:
252 characters
Recording paper:
58mm wide, thermal recording paper roll on 18mm diameter bobbin (EA-1250P option)
Power supply:
6V – (DC): Heavy duty manganese battery, size AA (or R6) × 4
AC: Local voltage with AC adaptor EA-23E (Option)
4.8V – (DC): Rechargeable battery, EA-27B (Option)
Operation:
Heavy duty manganese battery, size AA (or R6P):
Approx. 3,000 lines
UM-3: Approx. 2,000 lines
Rechargeable battery (EA-27B): Approx. 5,000 lines after charging 15 hours
Power consumption:
3.0W
Physical dimensions:
140.5mm wide, 116mm deep, 23mm high

3. Tape Recorder Interfacing Method




Black plug (for remote control) Make it connected with REMOTE jack of the tape recorder.
CE-50P terminal board
Gray plug (for data transfer and verification) Make it connected with EARPHONE jack or EXT. SPEAKER jack of the tape recorder.
Black plug (for remote control)
Gray plug (for data transfer and verification)
Red plug (for recording) Make it connected with MIC jack of the tape recorder.
Red plug (for recording)
Cassette cable

- Use of the CE-50P Tape Recorder exclusively designed for the Pocket Computer is recommended.

Cassette Tape Recorder
The following is a description of the minimum tape recorder specifications necessary for interfacing with the CE-50P.

Item	Requirements
1. Recorder Type	Any tape recorder, standard cassette or micro-cassette recorder, may be used in accordance with the requirements outlined below.
2. Input Jack	The recorder should have a mini-jack input labeled "MIC". Never use the "AUX" jack.
3. Input Impedance	The input jack should be a low impedance input (200 ~ 1,000 OHM.)
4. Minimum Input Level	Below 3 mV or −50 dB.
5. Output jack	Should be a minijack labeled "EXT. (EXTernal speaker", "MONITOR", "EAR (EARphone" or quivalent.
6. Output impedance	Should be below 10 OHM.
7. Output level	Should be above 1V (practical maximum output above 100 mW)
8. Distortion	Should be within 15% within a range of 2 kHz through 4 kHz.
9. Wow and Flutter	0.3% maximum (W.R.M.S)
10. Other	Recorder motor should not fluctuate speed.

SHARP CORPORATION

NOTES:

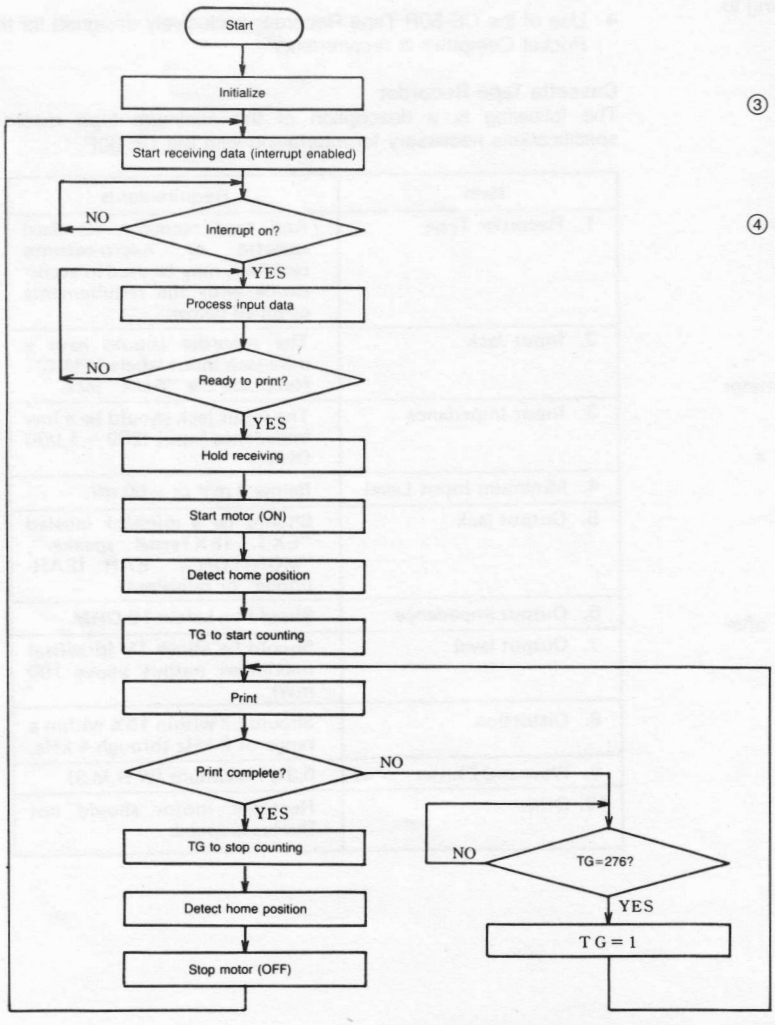
- Some of tape recorders may not operate properly owing to different specification or electrical characteristics affected by signal distortion, electrical noise, level dropout caused after long years of use.
- When using the tape recorder fitted with the mixing feature, it needs to disable the mixing function for both recording and playback.
- Depending on the tape recorder used, better reading result may be attained when the red plug is unplugged from the MIC jack.
- As it may impede proper data transfer and verification depending on the position of the volume control, tone control, bass control, and treble control, try to find the optimum level by varying their positions.

4. Printer description

4-1. Fundamental operation

① The system is initialized after power on or reset.
After the initialization, parameters are set up, data buffer is cleared and a single linefeed is conducted.
② When "n" lines of data are received after the start of data receive, the signal ACK is returned. It goes into the stop mode if no data entry is met.
③ The above action continues until a print command is received.
④ The motor starts to run and the home position switch is sensed.
⑤ Current is applied to the thermalhead in synchronization with the TG signal and "n" lines are printed. During this action, the motor does not stop.
⑥ When the home position is detected, the motor stops so that the printhead carrier may stop on the home position. Thereafter, it starts to receive data again after returning to step ② and the same is repeated.

CE50P operational flow

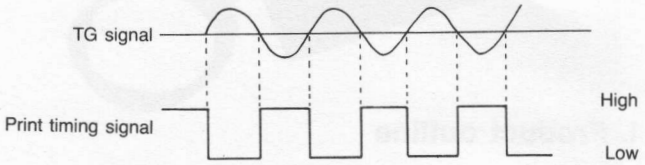


CE50P

Total TG per line (forward and return) of the printhead carrier

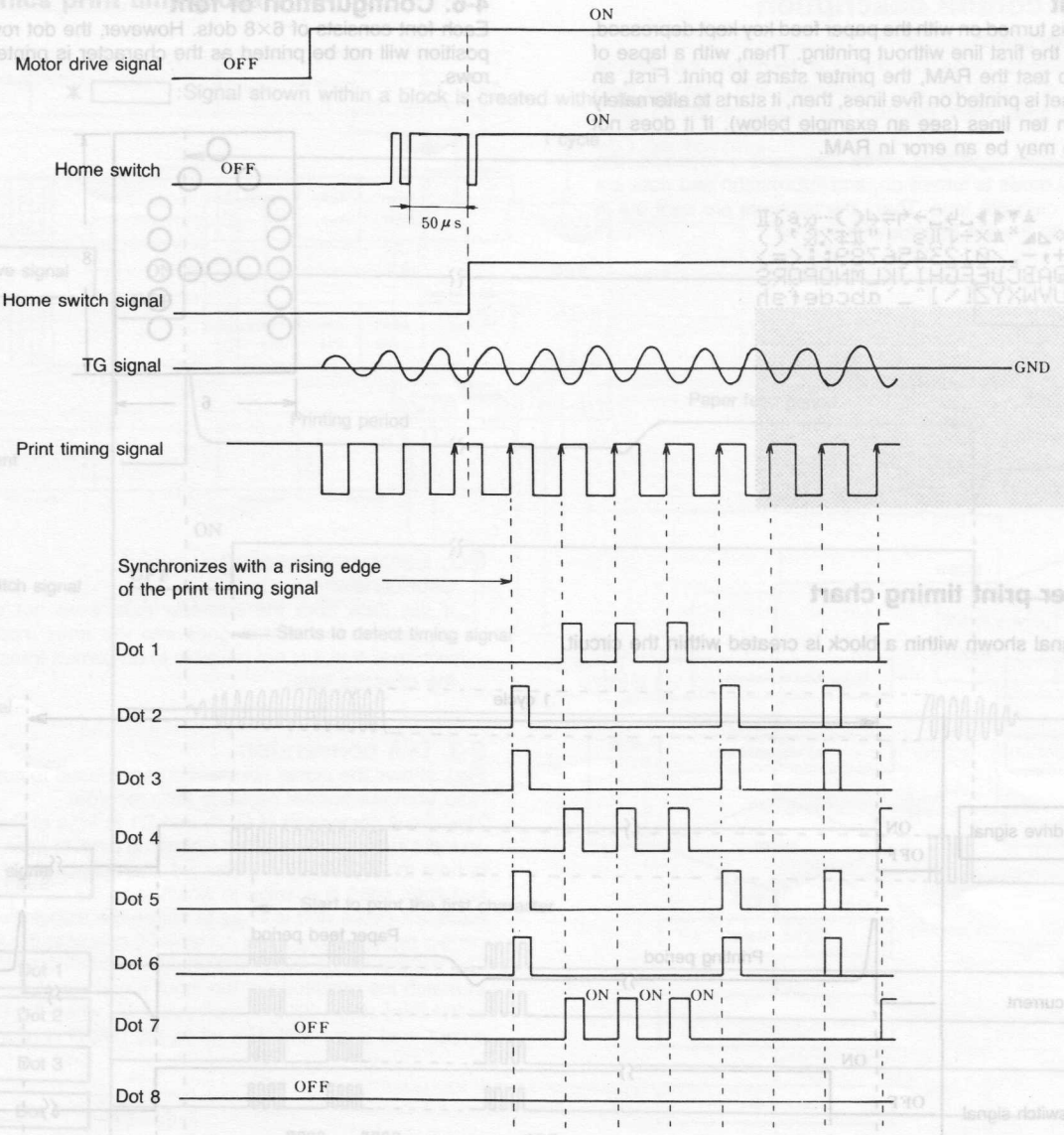
4-2. Signals

① FEED
This signal is valid only when the printhead is at the home position and will be disregarded during a printing operation or after receiving a single input data. It is normally high (+5V) and a low state of this signal feeds the line.
It is possible to feed line both manually and by command.
② Home switch
As a mechanical switch is used for the home position switch, the switch is open when the the printhead carrier is on the home position, otherwise, the switch is closed. So, the print start position synchronization is achieved by sensing off to on transition of the home position switch. By sensing on to off transition of the home position switch, the motor starts to stop.
③ TG (tacho generator) signal
The signal TG is issued from the signal generator directly connected to the motor. Pseudo sine wave signals of two cycles are generated every time the motor makes a turn.



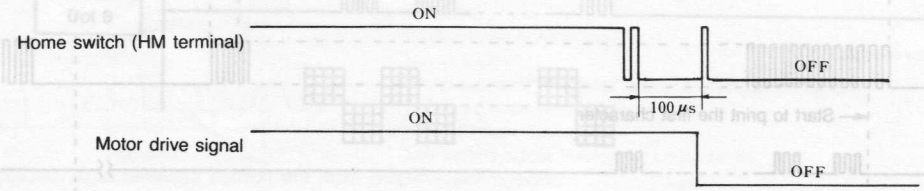
4-3. Printing operation

① Motor control
After the input data have been accepted, the motor driving current is applied to the motor.
② Print start timing
After the home position is sensed, the first row of dots of the first character or the first row of dots of the bit image graphic data are started to print in synchronization with the second rising edge of the print timing signal. And, a 50μs is provided for the sampling interval in detecting the off to on transition of the home position switch.
③ Character print
Eight head drive output signals (dot 1 to dot 8) are issued in synchronization with a rising edge of the print timing signal to print a character, in accordance with the pattern of the character to be printed.
④ Stopping of the motor
When "n" lines have been completed to printed, it becomes ready to accept a next data. A 100μs sampling interval is provided in detecting the off to on transition of the home position switch.



An example of printing "8": The character generator can issue a 6×8 matrix signals and dots 1 thru 7 are used to print and compose a character.

Print start timing chart



Motor stop timing chart

4-4. Error processing

① Error condition
When one of the following is met, the control goes into the error mode as the CPU assumes that it is not possible to control a proper motor operation.
(1) If TG inversion was not found within 10ms during printing operation.
(2) If the home position switch on and off transition was not found within 5 seconds during printing or paper feeding operation.

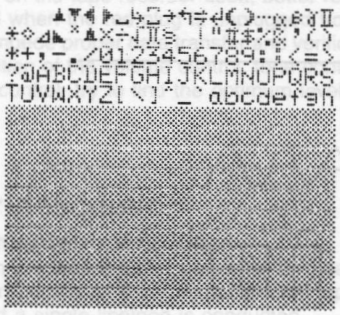
② What the CPU does for error processing
When it goes into the error mode as an error was found by the CPU, the following actions are taken.
(1) All printer outputs are set off.
(2) The motor is stopped.

③ How to reset the error mode
The power must be turned off first. After removing the error cause, turn power on again.

4-5. Test print

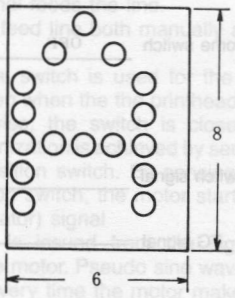
When the power is turned on with the paper feed key kept depressed, the printer feeds the first line without printing. Then, with a lapse of a few seconds to test the RAM, the printer starts to print. First, an entire character set is printed on five lines, then, it starts to alternately print each dot on ten lines (see an example below). If it does not take place, there may be an error in RAM.

Test pattern:



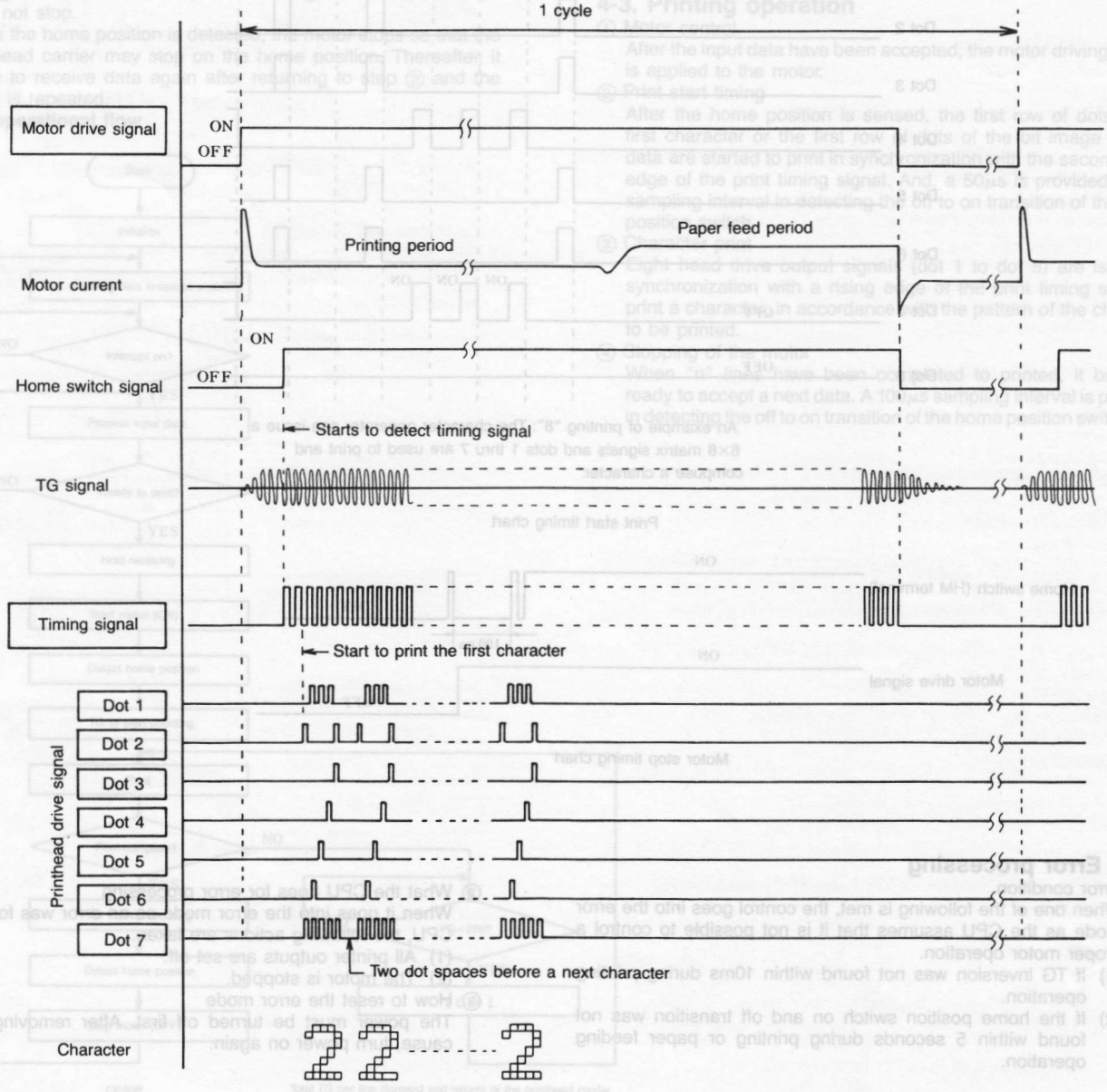
4-6. Configuration of font

Each font consists of 6×8 dots. However, the dot row in the lowest position will not be printed as the character is printed in seven dot rows.

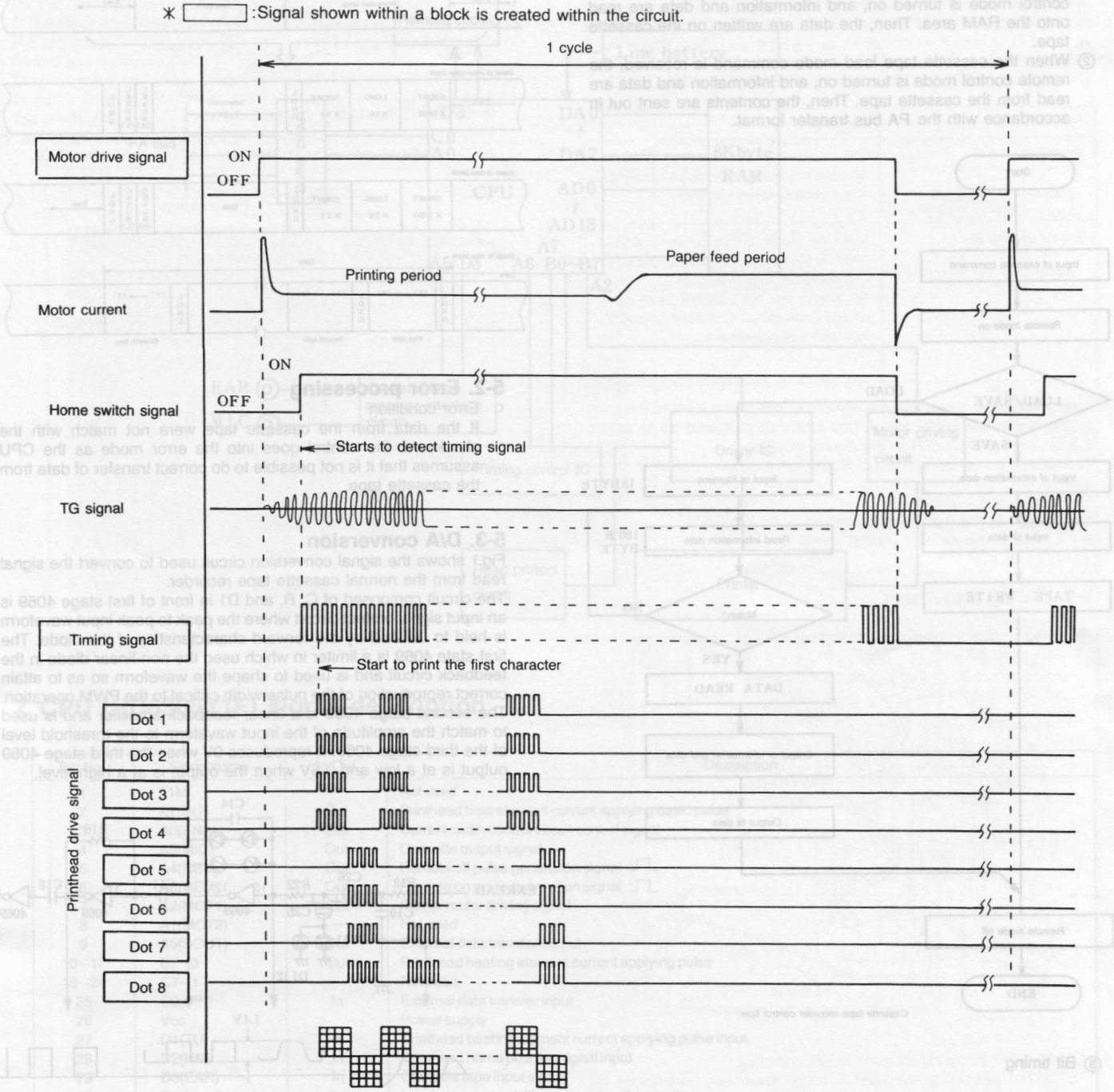


4-7. Character print timing chart

∗ ☐ :Signal shown within a block is created within the circuit.



4-8. Graphics print timing chart

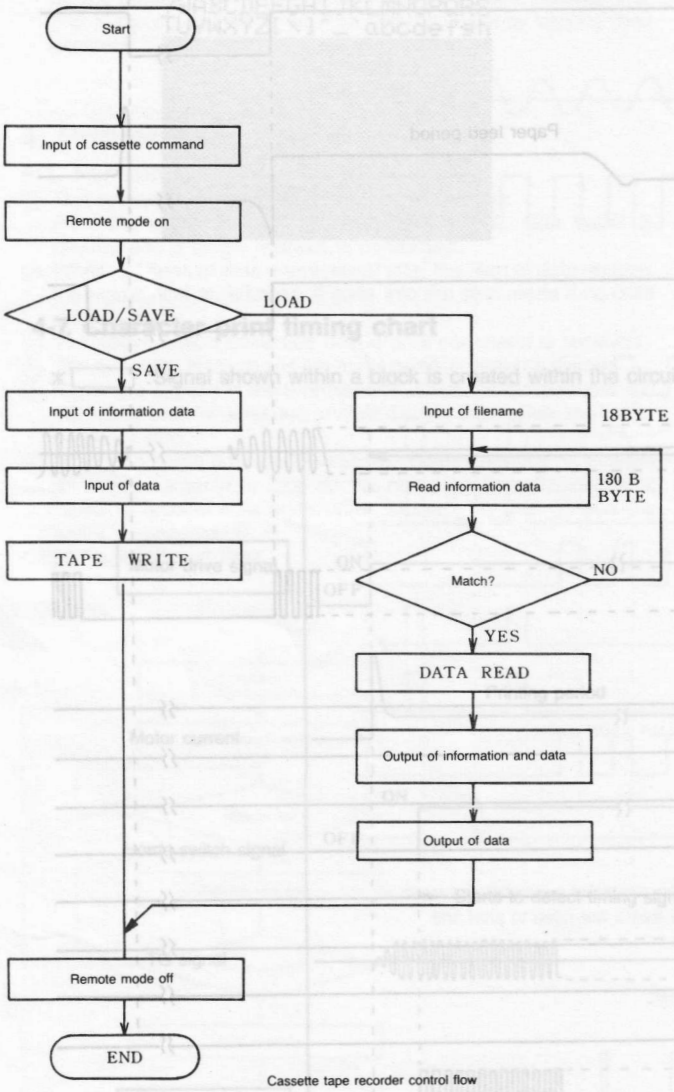


5. Cassette control description

5-1. Basic operation

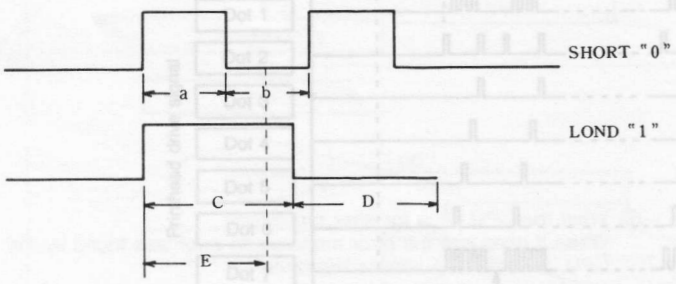
① When the cassette mode command is received, the remote control mode is turned on, and information and data are read onto the RAM area. Then, the data are written on the cassette tape.

② When the cassette tape load mode command is received, the remote control mode is turned on, and information and data are read from the cassette tape. Then, the contents are sent out in accordance with the PA bus transfer format.



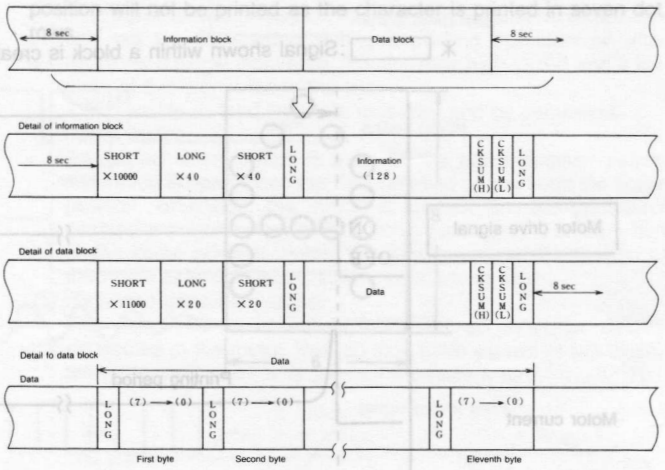
Cassette tape recorder control flow

③ Bit timing



A : 241 μs
B : 238 μs
C : 463 μs
D : 468 μs
E : 358 μs

④ Format



5-2. Error processing

○ Error condition

If the data from the cassette tape were not match with the checksum, the control goes into the error mode as the CPU assumes that it is not possible to do correct transfer of data from the cassette tape.

5-3. D/A conversion

Fig.1 shows the signal conversion circuit used to convert the signal read from the normal cassette tape recorder.

The circuit composed of C, R, and D1 in front of first stage 4069 is an input signal protect circuit where the peak to peak input waveform is held to 0.7V×2 by the forward characteristics of the diode. The first state 4069 is a limiter in which used the non-linear diode in the feedback circuit and is used to shape the waveform so as to attain correct reproduction of the pulse width critical to the PWM operation. The second stage 4069 is a linear feedback amplifier and is used to match the amplitude of the input waveform to the threshold level of the third stage 4069. It reproduces 0V when the third stage 4069 output is at a low and +5V when the output is at a high level.

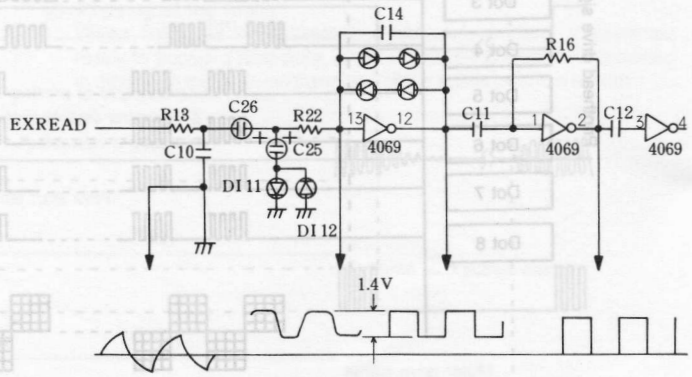


Fig.1 Signal from the normal cassette tape recorder.

Fig.2 shows the cassette tape recorder write head amplifier input signal protect circuit.

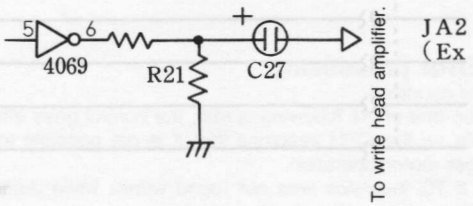
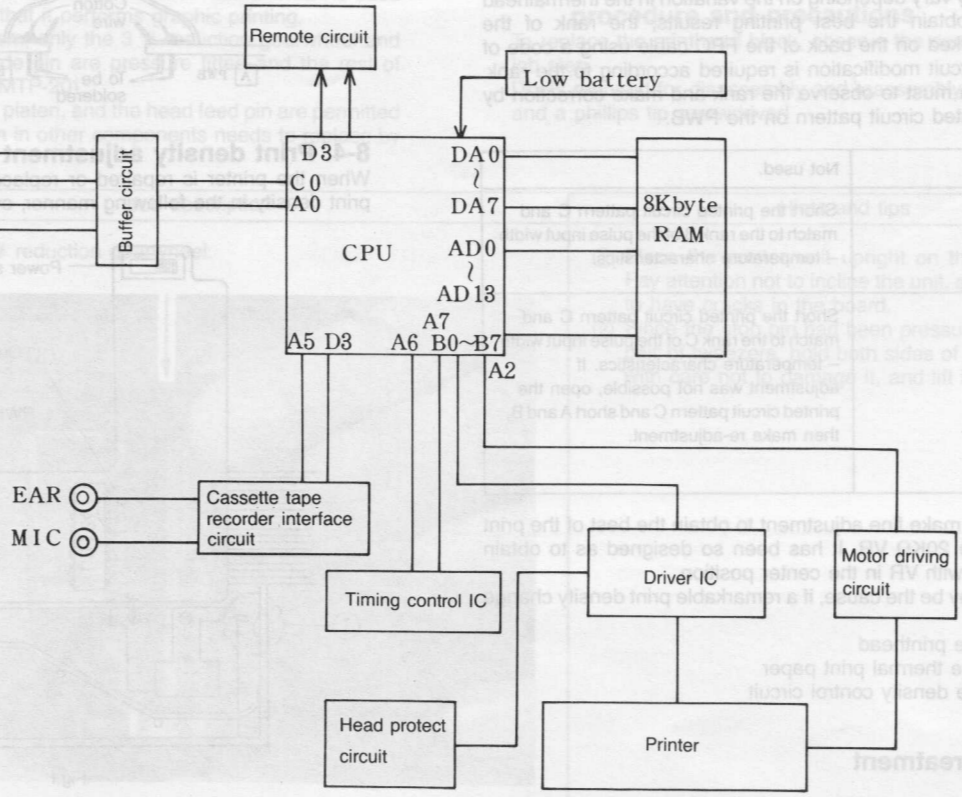


Fig.2 Head amp input protect circuit

6. Block diagram



7. CPU (HD6305Y1F) signal description

Pin No.	Signal name	In/Out	Description
1	T1M	—	Not used
2	A7(IN1)	Out	Printhead heat element current applying basic pulse
3	A6(ENA)	Out	Current width control circuit control signal
4	A5(MIC)	Out	Cassette output signal
5	A4(REM)	Out	Remote off pulse generation signal ⎍
6	A3(REM)	Out	Remote on pulse generation signal ⎍
7	A2(MOT1)	Out	Printer motor driving signal
8	A1(MOT2)	—	Not used
9	A0(SOUT)	Out	External data transfer output
10~17	B7~0	Out	Printhead heating element current applying pulse
18~24	C7~1	—	Not used
25	C0(SIN)	In	External data transfer input
26	Vcc		Power supply
27	D1(TU)	In	Printhead heating element current applying pulse input
28	D2(HM)	In	Printhead home position signal input
29	D3(EAR)	In	Cassette tape input signal
30	D4(Level)	In	Low battery signal, H=normal, L=abnormal
31	D5(TG)	In	Printer timing signal
32	D6	In	Paper feed key input line
33	D7	In	〃
34~36	AD0~12	Out	CPU to RAM address line
47	AD13	Out	RAM control signal
48	R/W	Out	Read/write signal, H=read, L=write
49	E	—	Not used
57~57	DA7~0	In/Out	CPU to RAM data line
58	Vss		Power supply
59	$\overline{RES}$	In	Reset input
60	$\overline{INT}$	In	External interrupt input
61	$\overline{STBY}$	In	Standby input, connected to high level
62	XTAL	In	Oscillation connection
63	EXTAL	In	〃
64	NUM	In	Connected to VCC via a 10KΩ resistance

8. Service precautions

8-1. Precaution in replacing the printer unit

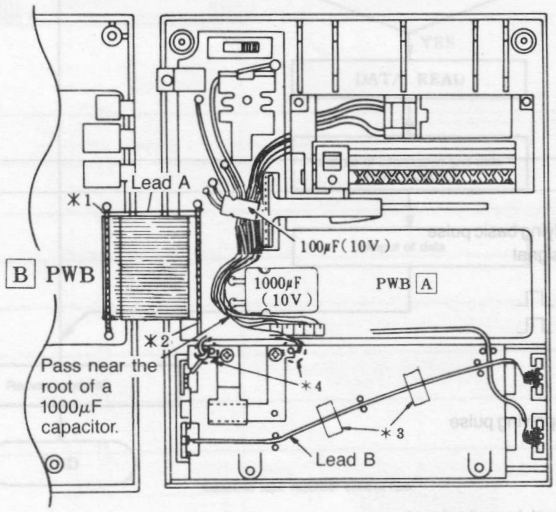
Print density may vary depending on the variation in the thermalhead resistance. To obtain the best printing results, the rank of the printhead is marked on the back of the FPC cable using a code of A, B, or C. A circuit modification is required according to the rank. Therefore, it is a must to observe the rank and make correction by shorting the printed circuit pattern on the PWB.

Printer of rank A	Not used.
Printer of rank B	Short the printed circuit pattern C and match to the rank B of the pulse input width – temperature characteristics.
Printer of rank C	Short the printed circuit pattern C and match to the rank C of the pulse input width – temperature characteristics. If adjustment was not possible, open the printed circuit pattern C and short A and B, then make re-adjustment.

After the above, make fine adjustment to obtain the best of the print quality using the 20KΩ VR. It has been so designed as to obtain the best results with VR in the center position.
The following may be the cause, if a remarkable print density change is met.

1. Fatigue of the printhead
2. Change in the thermal print paper
3. Trouble in the density control circuit

8-2. Wiring treatment

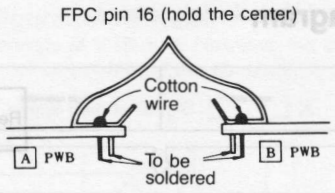


- Observe the following to route leads correctly.
  - *1, *2: For setting up the lead A, route the cotton wire same as the flat cable.
  - *3: For setting up the lead B, route it along the rib of the bottom housing and secure it with tape.
  - *4: To solder the lead to the rechargeable battery terminal, do not allow the strayed wire from the lead to extend out of the battery terminal.

  (When the ac adapter is to be used with the dry battery in use, the leads, A and B, must be correctly routed to avoid discharging the battery due to a slackness in the leads.

8-3. How to connect PWB A with PWB B

Secure the FPC pin 16 and the lead A using the cotton wire as illustrated.
The cotton wire must also be soldered same as the FPC.



8-4. Print density adjustment

When the printer is repaired or replaced, it requires to adjust the print density in the following manner, even if ranks are same.

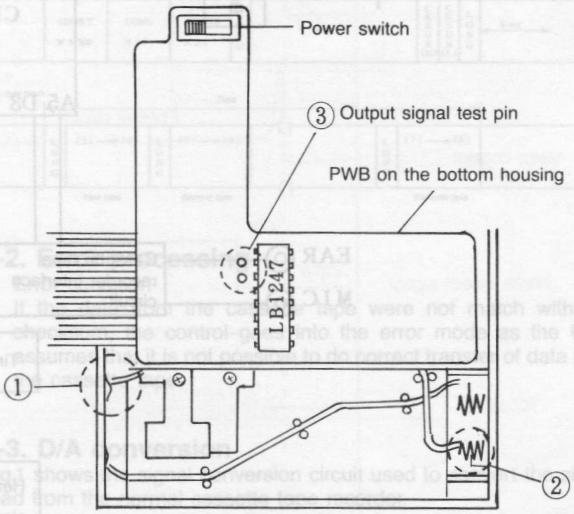


Fig.1

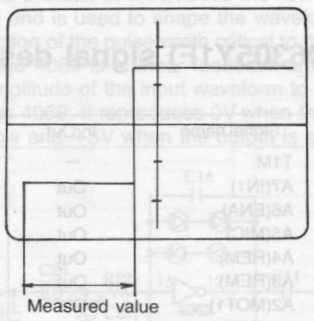


Fig.2

1. Set the supply voltage to 5V±1%. As shown in Fig.1, connect (+) line to ① and (--) line to ② and add 5V. The battery has to be removed in this occasion. The power supply must have a capacity of more than 3A.
2. Turn power on with the paper feed key depressed to go into the test mode.
3. Apply the oscilloscope to the LB1247 output signal test pin (Fig.1, ③).
4. When the printer started to print alternate dots, observe the oscilloscope and adjust by means of the potentiometer on the PWB B that the low level pulse width becomes the temperature characteristics of the table (Fig.2).

*: Adjustment must be done while the alternate dot patterns are being printed, otherwise, the proper adjustment may not be attained.

8-5. PWB units

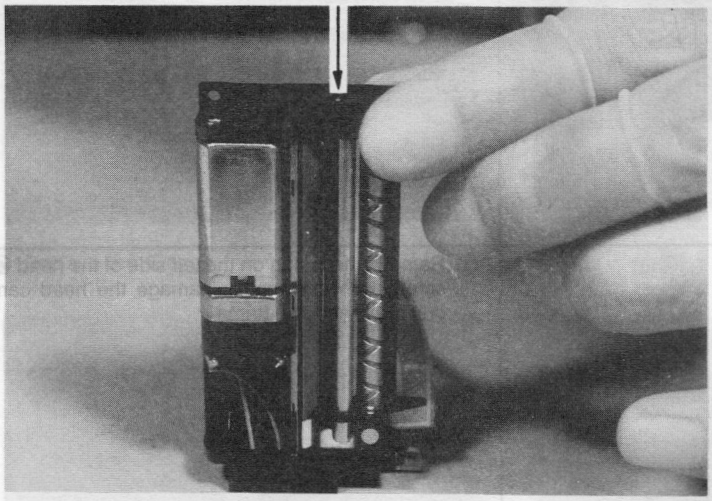
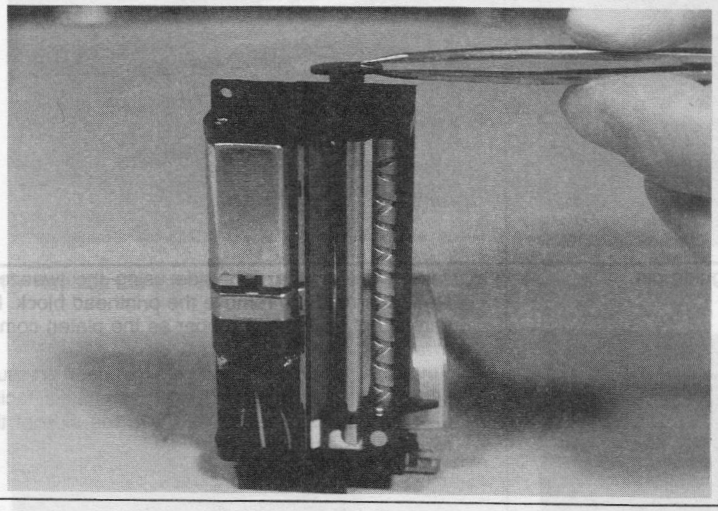
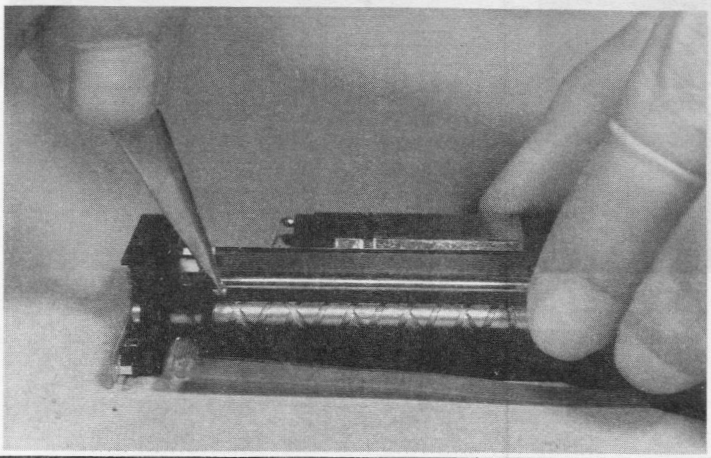
The PWB units consists of the PWB units, A and B.

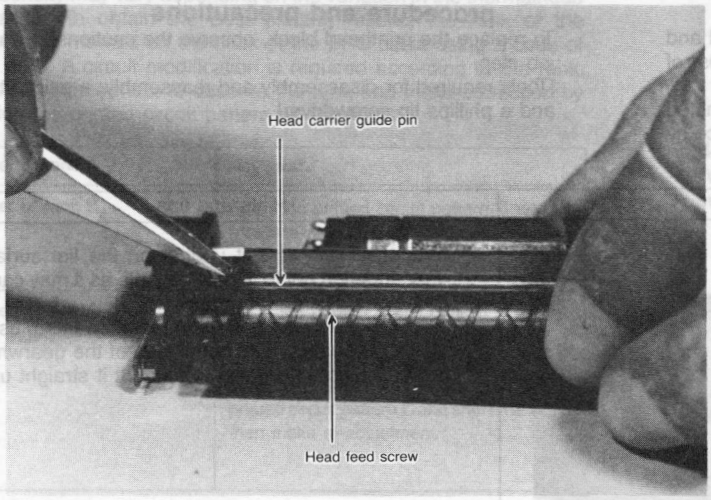
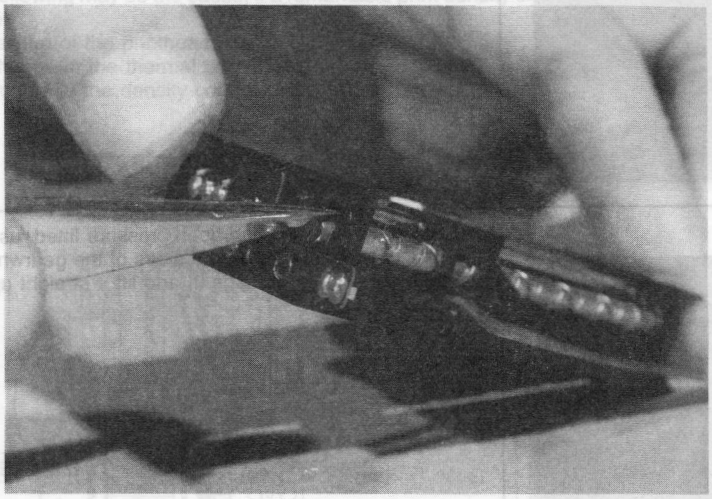
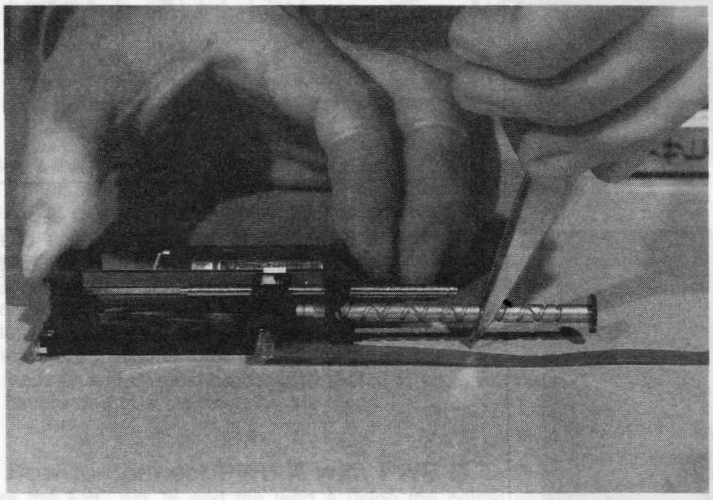
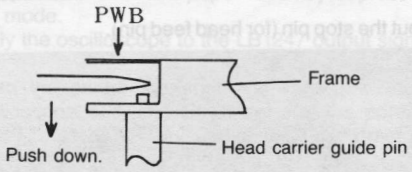
9. Printer troubleshooting

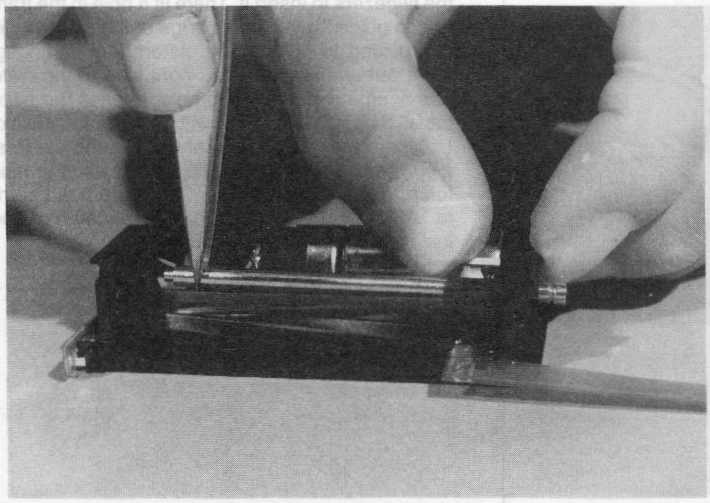
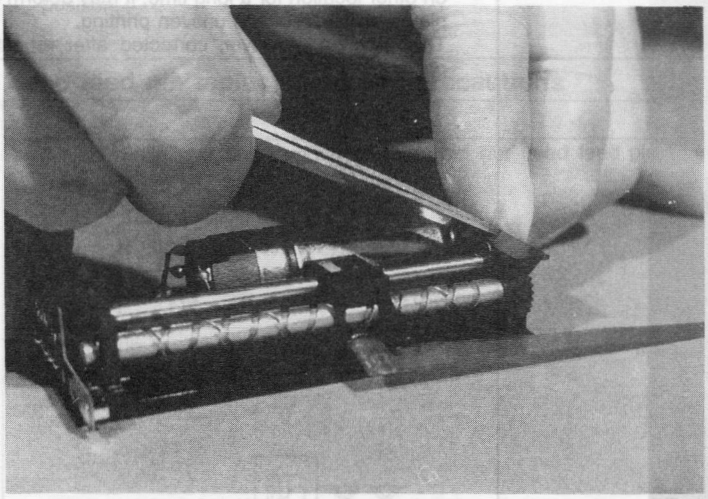
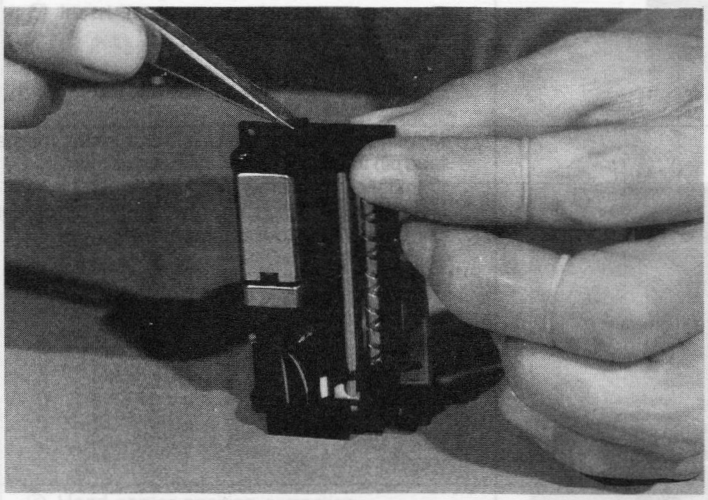
This printer is basically the same as the MTP-201G which is used for the CE126P, except that it performs graphic printing.
In terms of the mechanism, only the 3 # reduction gearwheel and the printhead carrier guide pin are pressure fitted and the rest of others are same as the MTP-201.
Only the printhead block, platen, and the head feed pin are permitted to repair and the problem in other components needs to replace by the whole printer unit.

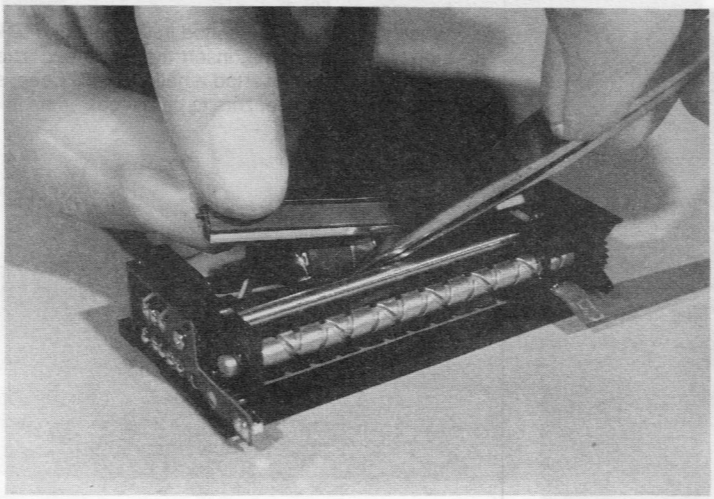
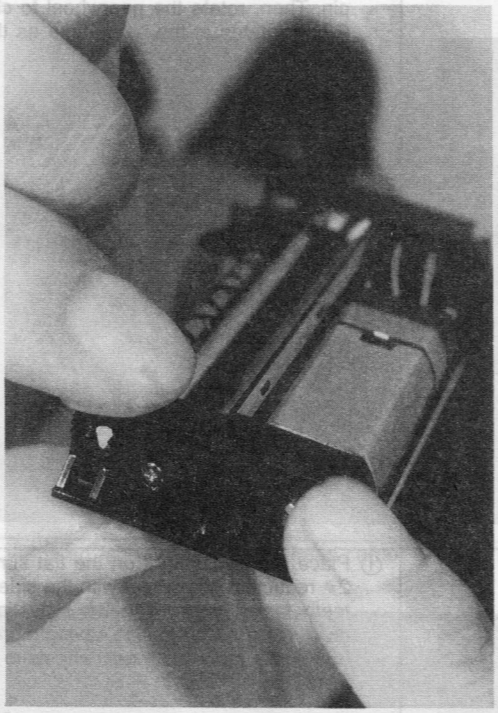
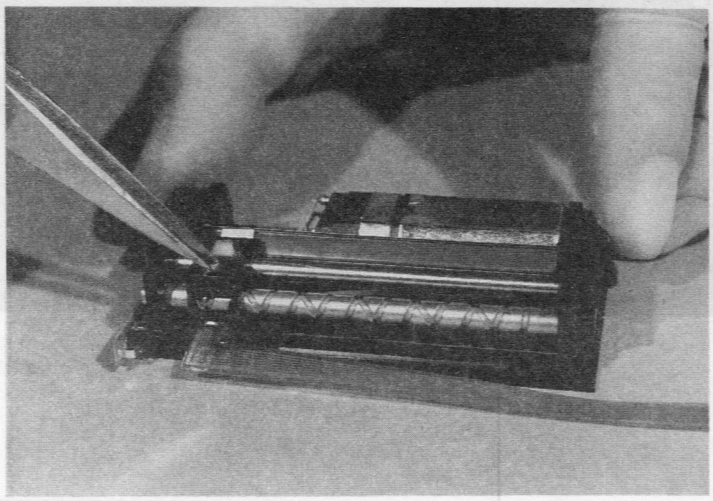
9-1. Printhead block and platen replacement procedure and precautions

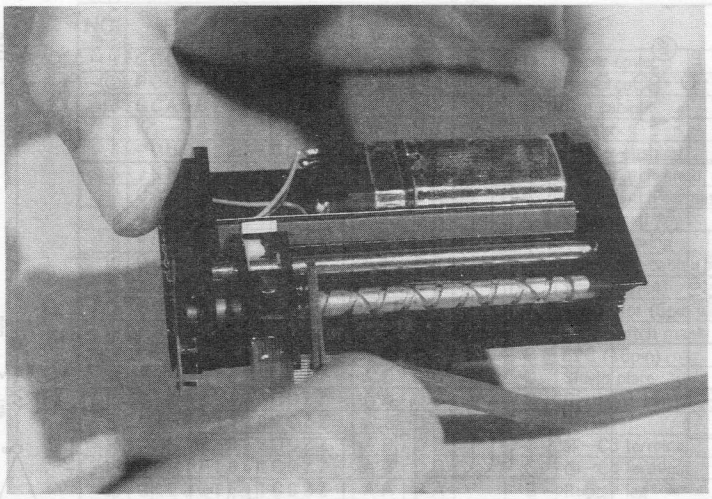
To replace the printhead block, observe the cautions given to each job step.
[Tools required for disassembly and reassembly: a pair of tweezers and a phillips tip screwdriver]

Job description	Hints and tips
① Remove the 3# reduction gearwheel. 	① Place the printer unit upright on the flat surface. Pay attention not to incline the unit, as it may cause to have cracks in the board. ② Since the stop pin had been pressure fitted, use a pair of tweezers, hold both sides of the gearwheel with care not to damage it, and lift it straight up.
② Remove the 2# reduction gearwheel. 	① Since the stop pin had been pressure fitted, use a pair of tweezers, hold both sides of the gearwheel with care not to damage it, and lift it straight up.
③ Pull out the stop pin (for head feed pin). 	① Hold the tip of the slit of the pin with a pair of tweezers, apply the tweezers to the side of the head carrier, and ply it to remove it. When the pin comes out 1mm, hold the outside of the pin and remove it straight up. ② For detail, refer to Paragraph 9-2.

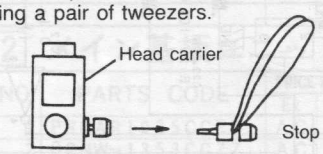
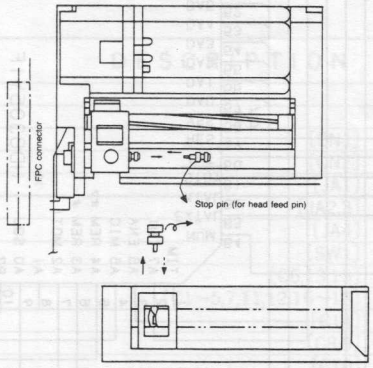
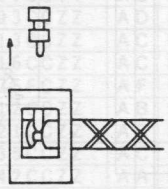
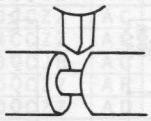
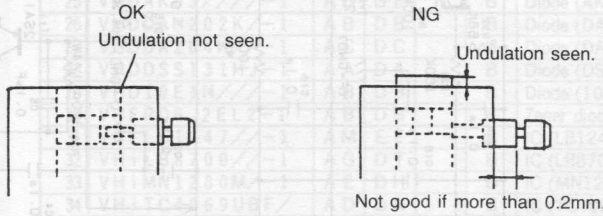
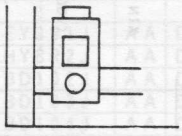
Job description	Hints and tips
④ Remove the head feed pin.  	① Push up the pin with a pair of tweezers inserted through the opening in the front of the head carrier to easily remove the pin. ② For detail, refer to Paragraph 9-2.
⑤ Remove the E-ring. 	① Remove the E-ring on the left side of the head feed screw, with care not to damage the head carrier guide pin and the frame.
⑥ Remove the head feed screw and the head carrier guide pin. 	① Take it out on the right side using the tweezers. Now, it is ready to remove the printhead block. Be careful not to damage rubber as the platen comes away at the same time. ② Since the head carrier guide pin had been pressure fitted, hold it upright with the gearwheels facing down and press the top end with the side of the tweezer to remove. 

Job description	Hints and tips
⑦ Replace the new printhead block. 	① Apply the printhead block to the right side wall of the frame and insert the head carrier guide pin (to be pressure fitted). When the top end is inserted in the hole on the left side wall of the frame, insert the head feed screw. After it has been inserted a half distance deep, set it down with the tweezers to permit easier insertion in the wall.
⑧ Replace the E-ring. 	① Install the E-Ring on the left side of the head feed pin. Then, rotate the gearwheel to check that the E-ring rotates at the same time as the head feed screw without slipping.
⑨ Replace the 2# reduction gear and 3# reduction gear. 	① Place the unit upright on the flat surface. Set the 2# reduction gearwheel with the side having more teeth facing down. The 3# reduction gearwheel must be set with the side having more teeth facing up. Lightly rotate both gearwheels to permit easier installation.

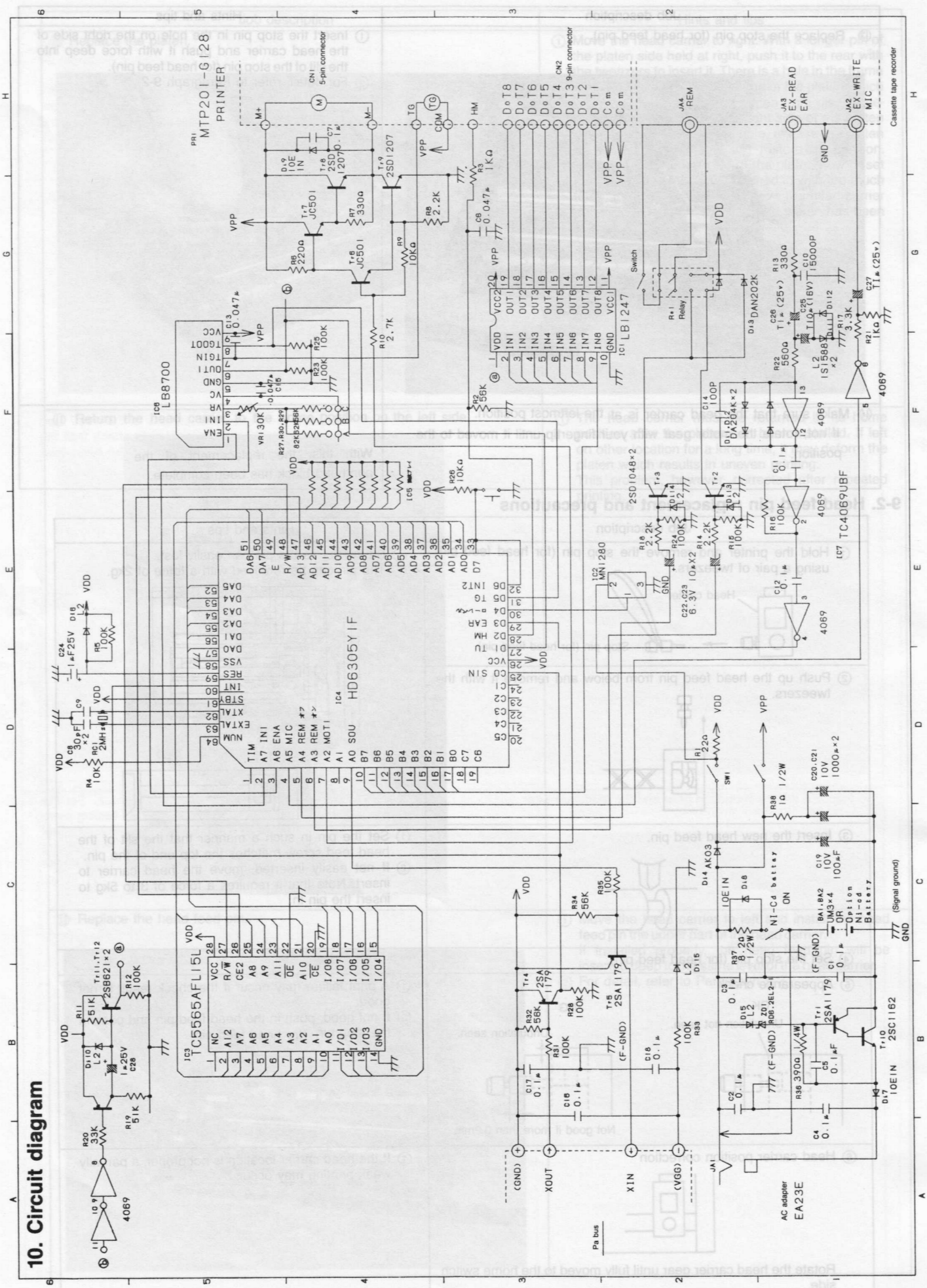
Job description	Hints and tips
⑩ Replace the platen. 	① Move the head carrier to right. With a longer pin of the platen side held at right, push it to the rear with the tweezers to insert it. There is a hole in the frame wall to guide the pin at the edge of the platen which is provided to prevent the platen from disengagement. When the pin on the right side of the platen has been inserted into the hole, release the platen table. The platen table will restore its position. Lightly rotate the left side of the platen now to set it on the given location. If pushed in with too much force, it may break the pin. Move the head carrier to left and right to check that the platen has been installed collateral to the printhead.
⑪ Return the head carrier to the home position on the left side. 	① The head carrier must be returned to its home position after the platen has been installed. If left on other location for a long time, it may deform the platen which results in uneven printing. This problem, however, corrected after repeated printing.
⑫ Replace the head feed pin. 	① Move the head carrier to left and install the head feed pin the upper part of the head carrier. If installed properly, the head feed pin will be inserted deep to the same level of the head carrier. ② For detail, refer to Paragraph 9-2.

Job description	Hints and tips
⑬ Replace the stop pin (for head feed pin). 	① Insert the stop pin in the hole on the right side of the head carrier and push it with force deep into the slit of the stop pin (for head feed pin). ② For detail, refer to Paragraph 9-2.
⑭ Make sure that the head carrier is at the leftmost position. If not, rotate the motor gear with your fingertip until it moved to the position.	With this, the replacement of the printhead block has been complete.

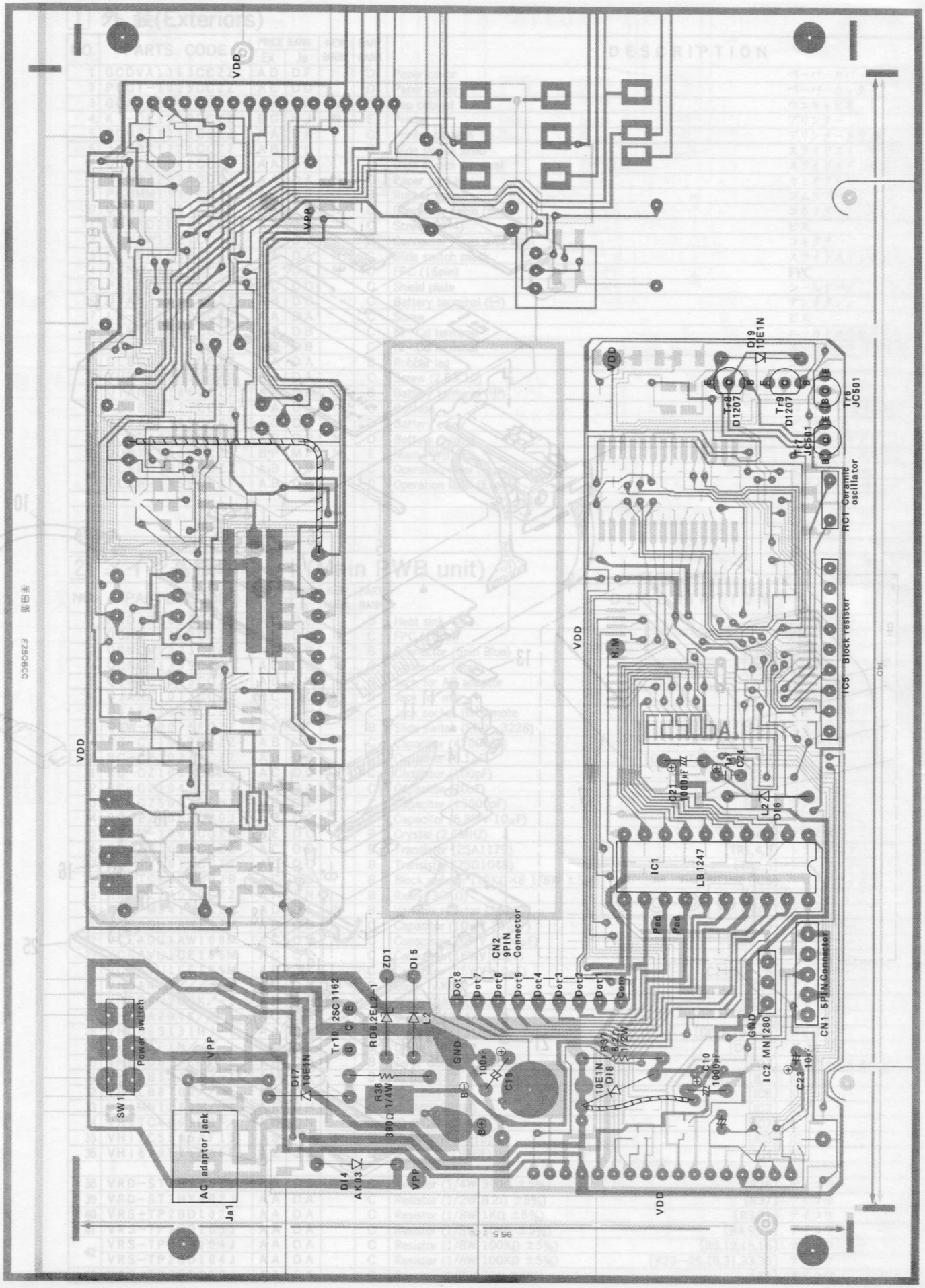
9-2. Head feed pin replacement and precautions

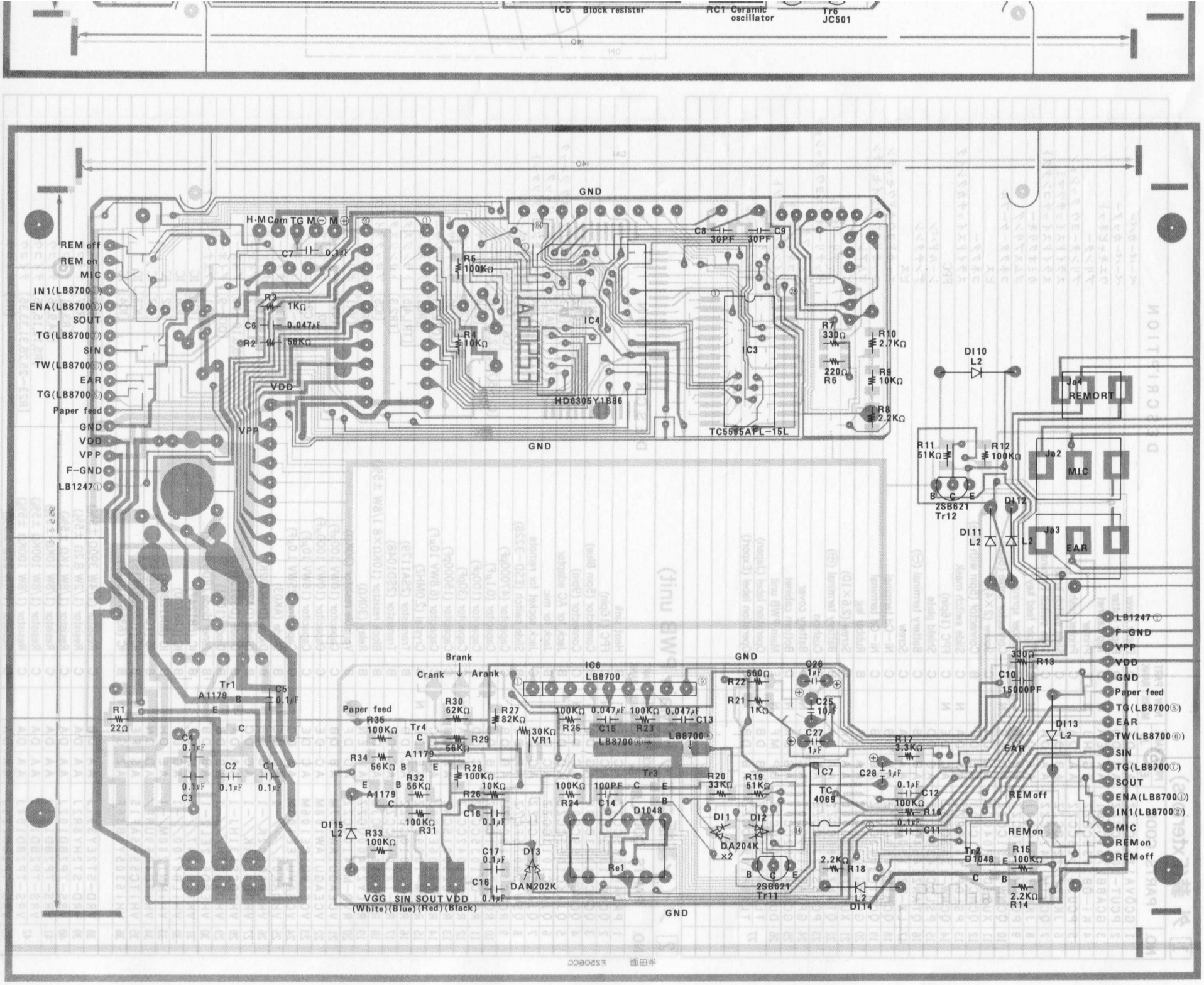
Job description	Hints and tips
① Hold the printer and remove the stop pin (for head feed pin) using a pair of tweezers. 	① Be careful as the pin can easily lost. ② The pin can be removed with a force of 2kg. 
② Push up the head feed pin from below and remove it with the tweezers. 	
③ Insert the new head feed pin. 	① Set the pin in such a manner that the slit of the head feed screw matches the top end of the pin. ② If not easily inserted, move the head carrier to insert. Note that it requires a force of 3 to 5kg to insert the pin in.
④ Set the stop pin (for head feed pin).	
⑤ Appearance check 	① A print failure may occur if the check result is not good. ② If not good, push in the head feed pin and push in the stop pin (for head feed pin).
⑥ Head carrier position correction  Rotate the head carrier gear until fully moved to the home switch side.	① If the head carrier location is not proper, a partially weak printing may occur.

10. Circuit diagram



11. Parts and signal position




IC5 Block resister
RC1 Ceramic oscillator
Tr6 JC501
GND
H·MCom TG M⊖ M⊕
REM off
REM on
MIC
IN1(LB8700②)
ENA(LB8700①)
SOUT
TG(LB8700⑦)
SIN
TW(LB8700⑥)
EAR
TG(LB8700⑧)
Paper feed
GND
VDD
VPP
F-GND
LB1247①
C7 0.1μF
R5 100KΩ
C8 30PF
C9 30PF
R2 1KΩ
C6 0.047μF
R2 58KΩ
R4 10KΩ
IC4
IC3
R7 330Ω
R6 220Ω
R10 2.7KΩ
R9 10KΩ
R8 2.2KΩ
HD6305Y1B86
TC5565APL-15L
DI10 L2
Ja4 REMORT
R11 51KΩ
R12 100KΩ
Ja2 MIC
2SB621 Tr12
DI12
DI11 L2
L2
Ja3 EAR
Brank
Crank
Arank
IC6 LB8700
R22 560Ω
R21 1KΩ
C26 1μF
C25 10μF
C27 1μF
R17 3.3KΩ
C28 1μF
IC7 TC 4069
C12 0.1μF
R16 100KΩ
C11 0.1μF
R18 2.2KΩ
2SB621 Tr11
DI14 L2
Tr2 D1048
R15 100KΩ
R14 2.2KΩ
C10 15000PF
R13 330Ω
DI13 L2
EAR
REMoff
REMon
LB1247①
F-GND
VPP
VDD
GND
Paper feed
TG(LB8700⑧)
EAR
TW(LB8700⑥)
SIN
TG(LB8700⑦)
SOUT
ENA(LB8700①)
IN1(LB8700②)
MIC
REMon
REMoff
R1 22Ω
Tr1 A1179
C5 0.1μF
C4 0.1μF
C2 0.1μF
C1 0.1μF
C3 0.1μF
R30 62KΩ
R27 82KΩ
R35 100KΩ
Tr4
R29 56KΩ
30KΩ VR1
R34 56KΩ
A1179
R28 100KΩ
R32 56KΩ
A1179
10KΩ
R26
C18 0.1μF
R31 100KΩ
DI15 L2
R33 100KΩ
C17 0.1μF
C16 0.1μF
DAN202K
DI3
Re1
100KΩ R25
0.047μF C15
100KΩ R23
0.047μF C13
LB8700④
Tr3
100KΩ R24
100PF C14
D1048
R20 33KΩ
R19 51KΩ
DI1
DI2
DA204K x2
VGG SIN SOUT VDD
(White)(Blue)(Red)(Black)
GND

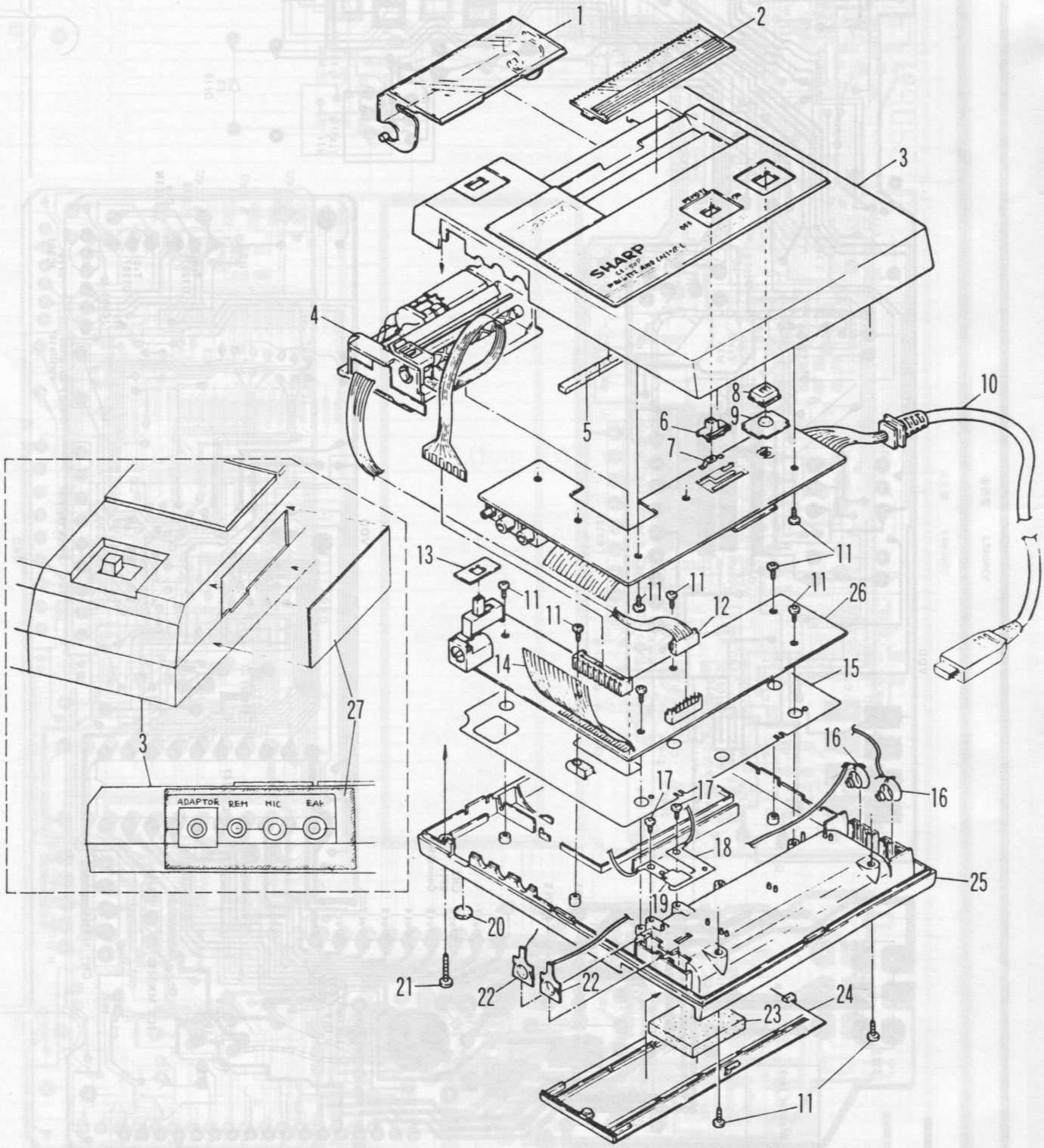
12. Parts list and guide

1 外 装(Exteriors)

NO.	PARTS CODE	PRICE RANK Ex	PRICE RANK Ja	NEW MARK	PART RANK	DESCRIPTION	
1	GCOVA1363CCZZ	AD	DF		D	Paper cover	ペーパーカバー
2	PCUT-1025CCZZ	AC	DD		D	Paper cutter	ペーパーカッター
3	GCABB2761CC01	AK	EA	N	D	Top cabinet	ウエキャビネット
4	Ki-OB1039CCZZ	BG	HJ	N	E	Printer	プリンター
5	PCUSS1218CCZZ	AA	DA		C	Printer cushion	プリンターヨウ クッション
6	JKNBZ1225CCZZ	AB	DB		C	Slide switch knob	スライドスイッチツマミ
7	QCNTM1042CCZZ	AA	DA		C	Slide switch terminal	スライドスイッチコンタクト
8	JKNBZ2024CC01	AA	DA	N	C	Paper feed key	カミオクリキー
9	PGUMM1337CCZZ	AB	DB		B	Rubber spring	ゴムスプリング
10	QCNW-1351CCZZ	AW	FP	N	C	Connector cable (5pin)	コネクターケーブル
11	XUBSD20P04000	AA	DA		C	Screw (2×4)	ビス
12	QCNCW1321CC03	AE	DJ		B	Connector (5pin with wire)	コネクター
13	PSLDP1563CCZZ	AA	DA	N	C	Slide switch mask	スライドスイッチカクシイタ
14	QCNW-1353CCZZ	AC	DE	N	C	FPC (16pin)	FPC
15	PSLDC1430CCZZ	AC	DD		C	Shield plate	シールドバン
16	QTANZ1454CCZZ	AB	DB		C	Battery terminal (⊖)	デンチタンシ
17	LX-BZ1120CCZZ	AA	DA		C	Screw	ビス
18	QCNTM1062CCZZ	AB	DB		C	Ni-Cd terminal	ニッカドヨウカドウセッテン
19	QCNTF1061CCZZ	AB	DB		C	Ni-Cd terminal	ニッカドヨウ コテイセッテン
20	GLEGG1011CCZZ	AA	DA		B	Rubber leg	ゴムアシ
21	XUBSF26P10000	AA	DA		C	Screw (2.6×10)	ビス
22	QTANZ1186CCZZ	AA	DA		B	Battery terminal (⊕)	バッテリー タンシ
23	PCUSS1227CCZZ	AA	DA		C	Cushion	バッテリー オサエヨウ クッション
24	GFTAB1189CC02	AC	DC	N	D	Battery cover	デンチ フタ
25	GCABA2762CC01	AG	DR	N	D	Bottom cabinet	ソコキャビネット
26	DUNTK9502CCZZ	BP	MF	N	E	Main PWB unit	メインキバンユニツト
27	TLABH1956CCZZ	AB	DB		C	Operation label (Japan)	セツメイ ラベル
	TLABH1955CCZZ	AB	DB		C	Operation label (Export)	セツメイ ラベル

2 メイン基板ユニット(Main PWB unit)

NO.	PARTS CODE	PRICE RANK Ex	PRICE RANK Ja	NEW MARK	PART RANK	DESCRIPTION		
1	PRDAR1035CCZZ	AC	DE		B	Heat sink		ホウネツバン
2	QCNW-1353CCZZ	AC	DE	N	C	FPC (16pin)		FPC
3	QCNCM1323CC0F	AG	DB		B	Connector (5pin Blue)	[CN1]	コネクター
4	QCNCW1399CC0i	AC	DE	N	C	Connector (9pin)	[CN2]	コネクター
5	QJAKC1003CCZZ	AD	DH		B	Jack for AC adaptor	[JA1]	AC アダプターヨウ ジャック
6	QJAKC1013CCZZ	AC	DD		B	Jack for mic	[JA2,3]	マイクロホン ジャック
7	QJAKC1016CCZZ	AC	DH		C	Jack socket for remote	[JA4]	リモートジャック ソケット
8	QSW-S0075FCZZ	AF	DL		B	Slide switch (ESD-3228)	[SW1]	スライドスイッチ
9	RC-CZ1012CCZZ	AB	DB		C	Capacitor (47000pF)	[C6,13,15]	コンデンサー
10	RC-CZ1021CCZZ	AB	DB		C	Capacitor (0.1μF)	[C1~5,7,11,12,16~18]	コンデンサー
11	RC-CZ1035CCZZ	AC	DD		C	Capacitor (100pF)	[C14]	コンデンサー
12	RC-CZ1042CCZZ	AA	DA	N	C	Capacitor (30pF)	[C8,9]	コンデンサー
13	RC-CZ5001SCN1	AB	DB		C	Capacitor (15000pF)	[C10]	コンデンサー
14	RC-EZ106ECC0J	AB	DC		C	Capacitor (6.8WV 10μF)	[C22,23]	コンデンサー
15	RCRM-1009CCZZ	AE	DL	N	B	Crystal (2.0MHZ)	[RC1]	クリスタル
16	RH-TX1010CCZZ	AC	DD		B	Transistor (2SA1179)	[TR1,4,5]	トランジスター
17	RH-TX1014CCZZ	AC	DC		B	Transistor (2SD1048)	[TR2,3]	トランジスター
18	RMPTC8103QCJB	AC	DD		B	Block resistor (10KΩ×8 1/8W ±5%)	[IC5]	ブロックテイコウ
19	RRLYZ2400QCZZ	AP	EN		B	Relay (30KΩ)	[RE1]	リレー
20	RVR-M3410QCZZ	AD	DF	N	B	Variable resistor (30KΩ)	[VR1]	ボリウム
21	VCEAGU1AW107M	AB	DB		C	Capacitor (10WV 100μF)	[C19]	コンデンサー
22	VCEAGU1AW108M	AC	DE		C	Capacitor (10WV 1000μF)	[C20,]	コンデンサー
23	VCSAVU1CE106M	AC	DE		C	Capacitor (16WV 10μF)	[C25]	コンデンサー
24	VCSAVU1EE105M	AB	DC		C	Capacitor (25WV 1.0μF)	[C24,26~28]	コンデンサー
25	VHDAK03////-1	AC	DE	N	B	Diode (AK03)	[DI4]	ダイオード
26	VHDDAN202K/-1	AB	DB		B	Diode (DAN202K)	[DI3]	ダイオード
27	VHDDA204K//-1	AC	DC		B	Diode (DA204K)	[DI1,2]	ダイオード
28	VHDDSS131HJ-1	AA	DA		B	Diode (DSS131HJ)	[DI5,6,10~15]	ダイオード
29	VHD10E1N///-1	AB	DB		B	Diode (10E1)	[DI7~9]	ダイオード
30	VHERD6.2EL2-1	AB	DB		B	Zener diode (RD6.2EL2)	[ZD1]	ツェナーダイオード
31	VHiLB1247//-1	AM	EE		B	IC (LB1247)	[IC1]	IC
32	VHiLB8700//-1	AG	DT		B	IC (LB8700)	[IC6]	IC
33	VHiMN1280M/-1	AE	DH		B	IC (MN1280M)	[IC2]	IC
34	VHiTC4069UBF/	AD	DN		B	IC (TC4069UBF)	[IC7]	IC
35	VHiTC5565AF15	AS	FE	N	B	IC (TC5565AF15)	[IC3]	IC
36	VHi6305Y1B86F	AZ	GC	N	B	IC (6305Y1B86F)	[IC4]	IC
38	VRD-ST2EY391J	AA	DB		C	Resistor (1/4W 390Ω ±5%)	[R36]	テイコウ
39	VRD-ST2HY8R2J	AA	DA		C	Resistor (1/2W 8.2Ω ±5%)	[R37]	テイコウ
40	VRS-TP2BD102J	AA	DA		C	Resistor (1/8W 1KΩ ±5%)	[R3,21]	テイコウ
41	VRS-TP2BD103J	AA	DA		C	Resistor (1/8W 10KΩ ±5%)	[R4,9,26]	テイコウ
42	VRS-TP2BD104J	AA	DA		C	Resistor (1/8W 100KΩ ±5%)	[R5,12,15,16]	テイコウ
	VRS-TP2BD104J	AA	DA		C	Resistor (1/8W 100KΩ ±5%)	[R23~25,28,31,33,35]	テイコウ
43	VRS-TP2BD220J	AA	DA		C	Resistor (1/8W 22Ω ±5%)	[R1]	テイコウ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22
23
24
25
26
27
SHARP
ADAPTOR
REM
MIC
EAR

2 メイン基板ユニット(Main PWB unit)

NO.	PARTS CODE	PRICE RANK Ex	PRICE RANK Ja	NEW MARK	PART RANK	DESCRIPTION	
44	VRS−TP2BD221J	AB	DB		C	Resistor (1/8W 220Ω ±5%)	[R6] テイコウ
45	VRS−TP2BD222J	AA	DA		C	Resistor (1/8W 2.2KΩ ±5%)	[R8,14,18] テイコウ
46	VRS−TP2BD272J	AA	DA		C	Resistor (1/8W 2.7KΩ ±5%)	[R10] テイコウ
47	VRS−TP2BD331J	AB	DB		C	Resistor (1/8W 330Ω ±5%)	[R7,13] テイコウ
48	VRS−TP2BD332J	AA	DA		C	Resistor (1/8W 3.3KΩ ±5%)	[R17] テイコウ
49	VRS−TP2BD333J	AA	DA		C	Resistor (1/8W 33KΩ ±5%)	[R20] テイコウ
50	VRS−TP2BD513J	AA	DA		C	Resistor (1/8W 51KΩ ±5%)	[R11,19] テイコウ
51	VRS−TP2BD561J	AA	DA		C	Resistor (1/8W 560Ω ±5%)	[R22] テイコウ
52	VRS−TP2BD563J	AA	DA		C	Resistor (1/8W 56KΩ ±5%)	[R2,29,32,34] テイコウ
53	VRS−TP2BD623J	AA	DA		C	Resistor (1/8W 62KΩ ±5%)	[R30] テイコウ
54	VRS−TP2BD823J	AA	DA		C	Resistor (1/8W 82KΩ ±5%)	[R27] テイコウ
55	VSDSC001−B/CC	AA	DA		B	Transistor (DSC001)	[TR6,7] トランジスター
56	VS2SC1162−CDC	AE	DL		B	Transistor (SC1162)	[TR10] トランジスター
57	VS2SD1207−T−1	AD	DF		B	Transistor (2SD1207)	[TR8,9] トランジスター
58	VS2SB621AR/SC	AD	DH		B	Transistor (2SB621)	[TR11] トランジスター
59	XBBSD26P06000	AA	DA		C	Screw (2.6×6)	ビス
	ユニット (Unit)						
901	DUNTK9502CCZZ	BP	MF	N	E	Main PWB unit	メインキバンユニット

3 梱包材 & 付属品(Packing material & Accessories)

NO.	PARTS CODE	PRICE RANK Ex	PRICE RANK Ja	NEW MARK	PART RANK	DESCRIPTION	
1	CPAPR1025CC05	——	ZZ		S	(Japan only)	ロールペーパー (5コ/1パック)
2	QPLGJ1014CCZZ	AR	FB		C	Cable for cassette	カセットプラグ
3	TiNSJ4870CCZZ	AG	DR	N	D	Instruction book (Japan)	トリアツカイセツメイショ
	TiNSE4871CCZZ	AE	DK	N	D	Instruction book (USA)	トリアツカイセツメイショ
	TiNSE4873CCZZ	AE	DK	N	D	Instruction book (U.Kingdom)	トリアツカイセツメイショ
	TiNSM4872CCZZ	AG	DT	N	D	Instruction book(E,F,G,S,I) (Other countrise)	トリアツカイセツメイショ
4	TLSTS1015CCZZ	AA	DA		D	Service list (Japan only)	サービスリスト
5	UBAGC1498CCZZ	AG	DU	N	D	Soft case	ソフト ケース
6	SPAKA8215CCZZ	AF	DM		D	Packing cushion for set	セット ヨウ クッション
7	SPAKA8216CCZZ	AC	DE		D	Packing cushion for Accessories	フゾク ヨウ クッション
8	SPAKC891BCCZZ	AG	DR	N	D	Packing case (Japan)	パッキングケース
	SPAKC893BCCZZ	AG	DR	N	D	Packing case (Export)	パッキングケース

4 プリンターパーツ(Printer parts)

No.	PARTS CODE	PRICE RANK Ex	PRICE RANK Ja	NEW MARK	PART RANK	DESCRIPTION	
1	0DA61234319//	AY	GA	N	E	Head block	ヘッドブロック
2	0DA61224139//	AK	EA	N	C	Platen	プラテン
3	0DA69021419//	AD	DF	N	C	Head feed pin	ヘッドオクリピン

13. Pulse width – temperature characteristics

Rank B		Rank C	
Temperature (°C)	pulse width(ms)	Temperature (°C)	pulse width(ms)
T=0.	P=2.5	T=0.	P=2.3
T=1.	P=2.5	T=1.	P=2.3
T=2.	P=2.5	T=2.	P=2.2
T=3.	P=2.5	T=3.	P=2.2
T=4.	P=2.5	T=4.	P=2.2
T=5.	P=2.4	T=5.	P=2.2
T=6.	P=2.4	T=6.	P=2.2
T=7.	P=2.4	T=7.	P=2.2
T=8.	P=2.4	T=8.	P=2.1
T=9.	P=2.4	T=9.	P=2.1
T=10.	P=2.3	T=10.	P=2.1
T=11.	P=2.3	T=11.	P=2.1
T=12.	P=2.3	T=12.	P=2.1
T=13.	P=2.3	T=13.	P=2.0
T=14.	P=2.2	T=14.	P=2.0
T=15.	P=2.2	T=15.	P=2.0
T=16.	P=2.2	T=16.	P=2.0
T=17.	P=2.2	T=17.	P=2.0
T=18.	P=2.2	T=18.	P=2.0
T=19.	P=2.1	T=19.	P=1.9
T=20.	P=2.1	T=20.	P=1.9
T=21.	P=2.1	T=21.	P=1.9
T=22.	P=2.1	T=22.	P=1.9
T=23.	P=2.1	T=23.	P=1.9
T=24.	P=2.0	T=24.	P=1.8
T=25.	P=2.0	T=25.	P=1.8
T=26.	P=2.0	T=26.	P=1.8
T=27.	P=2.0	T=27.	P=1.8
T=28.	P=2.0	T=28.	P=1.8
T=29.	P=1.9	T=29.	P=1.7
T=30.	P=1.9	T=30.	P=1.7
T=31.	P=1.9	T=31.	P=1.7
T=32.	P=1.9	T=32.	P=1.7
T=33.	P=1.9	T=33.	P=1.7
T=34.	P=1.8	T=34.	P=1.7
T=35.	P=1.8	T=35.	P=1.7
T=36.	P=1.8	T=36.	P=1.6
T=37.	P=1.8	T=37.	P=1.6
T=38.	P=1.7	T=38.	P=1.6
T=39.	P=1.7	T=39.	P=1.6
T=40.	P=1.7	T=40.	P=1.6

The rank A is not used by the CE50P.

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